

WHAT IS CLAIMED IS:

1 1. A self-contained hinge assembly for use in a flip device of the type
2 having a main part and a flip part that are joined to permit opening and closing of
3 the flip part comprising:
4 a cam having a biasing surface;
5 a cam follower operationally associated said biasing surface;
6 a biasing member for urging the cam and cam follower together and
7 having a longitudinal axis oriented in a first direction extending from underneath
8 said cam follower surface;
9 a housing for closely holding at least said cam and said cam
10 follower; and
11 a rotatable key member operably associated with and extending from
12 an end portion of said cam and out of said housing in a second direction that is
13 generally perpendicular to said first direction, said key member configured to
14 engage the flip part of the flip device.

1 2. The hinge assembly of claim 1 wherein said cam includes a
2 generally cylindrical camshaft.

1 3. The hinge assembly of claim 1 wherein said cam follower includes a
2 follower profile configured to include a sloped portion.

1 4. The hinge assembly of claim 1 wherein said cam follower is
2 configured to promote compression of said biasing member at said sloped portion.

1 5. The hinge assembly of claim 1 wherein said housing is configured to
2 be generally rectangular for closely holding said cam, said cam follower, and said
3 biasing member.

1 6. The hinge assembly of claim 5 wherein said housing is configured to
2 be disposed within the main part of the flip device in a direction generally
3 perpendicular to an axis of rotation of the flip part.

1 7. The hinge assembly of claim 5 wherein said housing is configured to
2 be disposed within a predetermined side portion of said housing.

1 8. The hinge assembly of claim 1 wherein said cam follower further
2 includes a plurality of legs configured to provide lateral stability to said cam
3 follower within said housing.

1 9. The hinge assembly of claim 1 wherein said cam follower further
2 includes a plurality of legs configured to provide alignment for said biasing
3 member with respect to said cam follower.

1 10. The hinge assembly of claim 1 wherein said cam follower further
2 includes four legs configured to provide lateral stability to said cam follower
3 within said housing.

1 11. The hinge assembly of claim 1 wherein said cam follower surface
2 further includes four legs configured to provide alignment for said biasing member
3 with respect to said cam follower.

1 12. The hinge assembly of claim 1 further comprising an elongated shaft
2 extending from said cam follower in a generally perpendicular direction.

1 12. The hinge assembly of claim 12 wherein said biasing member is a
2 coiled spring configured to encircle said elongated shaft.

1 13. The hinge assembly of claim 1 wherein said key member is an
2 elongated shaft having a generally Y-shaped cross-section.

1 14. The hinge assembly of claim 1 wherein said key member is a
2 generally planar, rectangular fin.

1 15. The hinge assembly of claim 1 wherein said key member is
2 configured to matingly engage a corresponding recess disposed within the flip part
3 of the flip device.

1 16. The hinge assembly of claim 1 further comprising an elongated shaft
2 configured to depend from an underside of said cam follower surface.

1 17. The hinge assembly of claim 16 wherein said elongated shaft
2 includes a longitudinal axis that corresponds to said longitudinal axis of said
3 biasing member.

1 18. The hinge assembly of claim 1 wherein said hinge assembly exerts a
2 biasing force in an open direction when said rotatable key member is rotated
3 approximately 30° in said open direction.

1 19. The hinge assembly of claim 1 wherein said hinge assembly exerts a
2 biasing force in a closed direction when said rotatable key member is rotated
3 approximately 30° in said closed direction.

1 20. The hinge assembly of claim 1 wherein said housing includes a first
2 and a second subunit.

1 21. The hinge assembly of claim 20 wherein said first and second
2 subunits are configured to matingly engage one another.

1 22. The hinge assembly of claim 20 wherein said first and second
2 subunits are maintained in mating engagement by orbital riveting.

1 23. The hinge assembly of claim 20 wherein said first subunit and said
2 second subunit are configured to matingly engage one another in a snap-fit.

1 24. The hinge assembly of claim 20 wherein said first and second
2 subunits include mating snap-fit members for releasably securing said first and
3 second subunits to one another.

1 25. The hinge assembly of claim 1 wherein said cam includes an end
2 that is configured to matingly engage a corresponding recess in said housing to
3 releasably secure said cam to said housing.

1 26. A self-contained hinge assembly for use in a flip device of the type
2 having a main part and a flip part that are joined to permit opening and closing of
3 the flip part comprising:

4 a cam;
5 a cam follower surface;

an elongated shaft extending from said cam follower in a generally perpendicular direction;

a biasing member configured to surround said elongated shaft;

a generally rectangular housing having an orifice on at least one surface thereof, wherein said cam, said cam follower surfaces; said elongated shaft and said biasing member are disposed within said housing; and

a rotatable key member extending from said cam and through said orifice in said housing and configured to engage the flip part of the flip device.

27. A self-contained hinge assembly for use in a flip device of the type having a main part and a flip part that are joined to permit opening and closing of the flip part comprising:

a housing disposed within the main part of the flip device;

a cam assembly disposed within said housing and configured to reciprocate in a first direction; and

a rotatable key member extending outwardly from said housing from said cam assembly in a direction generally perpendicular to said first direction and configured to engage the flip part of the flip device.

28. A method of assembling a self-contained hinge assembly of the type used in a flip device having a main part and a flip part that are joined by the hinge assembly, comprising:

orienting a cam with respect to a follower surface;

orienting a biasing member with respect to said follower surface;

configuring a housing having a plurality of subunits to closely hold said cam and said follower surface;

coupling said plurality of subunits to form said housing; and

coupling a key member to said cam via a recess in said housing.

1 29. A method of assembling a self-contained hinge assembly of the type
2 used in a flip device having a main part and a flip part that are joined by the hinge
3 assembly, comprising:

4 orienting a cam having a key member extending from an end thereof
5 with respect to a follower surface to communicate motion to said follower surface;

6 orienting a biasing member with respect to said follower surface so
7 that said biasing member has a longitudinal axis that is generally perpendicular to
8 an underside of said follower surface;

9 configuring a housing having a plurality of subunits to tightly
10 accommodate said cam, said follower surface and said biasing member;

11 coupling said plurality of subunits to form said housing wherein said
12 key member extends from a recess disposed on said housing.

1 30. A self-contained hinge assembly for use in a flip device that includes
2 a housing, a cam assembly and a biasing member disposed within said housing
3 and a key member extending from said housing, wherein both an axis of rotation
4 of said cam assembly and an axis of rotation of said key member are normal to a
5 longitudinal axis of said biasing member.